Course Description: This course introduces quality control techniques applicable in various engineering settings. These techniques are widely used in monitoring and improving the quality of both products and services. Topics include process quality inference, statistical process control, Shewhart control charts, process capability analysis, CUSUM and EWMA charts. Various simulation models will be used to represent and generate data sets in various settings, for analysis with Python.

Exclusion: MIE364, MIE304, MIE1727 or equivalent

Lecturer: Daniel Frances (frances@mie.utoronto.ca)

TAs: nasrin.yousefi@mail.utoronto.ca, lucas.paganin@mail.utoronto.ca


Textbook: Instructor prepared 12 chapter e-textbook to be partially accessible May 19


Pre-course: Students are encouraged to attend a pre-course Webinar 6 pm on Tuesday May 26

Course Duration and Format: The online 9-day course (June 2-12) starts each day with a 9 am Opening Webinar via Bb Collaborate to preview the day, followed by a 1/2 hour ProctorU invigilated multiple choice quiz (a mock quiz on Day 1) via Quercus. Most questions will only require a calculator, some may require simple Python calculations using Jupyter Notebooks on ECF. There will be a morning 10:00 AM to (about) noon study program using the e-textbook, a pre lunch Webinar to reconnect, an afternoon 1:00-3:00 study program, a 3 pm poll to select the problems to be taken up at the tutorial, a 4-6 pm tutorial covering both the theory and the Python computations, and a TA run 7-9 Piazza session to take up additional questions you may have. There will be a 50% ProctorU invigilated final exam 9-12 on Tuesday Jun 16, 2020.

Daily Tutorial: Online 4-6 pm

Marking: Attendance at Daily Opening Webinars 10%

Daily ProctorU invigilated Online Quizzes 40%

Final Online Exam 9-12 Tuesday June 16 50%

Day | Date | Topic | Ref*
--- | --- | --- | ---
1 | 02-Jun | Intro to Quality Control and Review of Statistics and Probability | 1,2,3,4
2 | 03-Jun | Review of Statistical Inference | 5
3 | 04-Jun | Introduction to Control Charts for Variables | 6-8
4 | 05-Jun | Control Charts for Variables | 8
5 | 06-Jun | | |
6 | 07-Jun | | |
7 | 08-Jun | Introduction to Control Charts for Attributes | 9
8 | 09-Jun | Control Charts for Attributes | 9
9 | 10-Jun | Process Capability | 10
10 | 11-Jun | CUSUM Charts | 11
11 | 12-Jun | EWMA Charts | 12
* Chapter references shown are from the e-textbook